## CERTIFICATE OF ANALYSIS

# BASELINE® Hydrochloric Acid

F	RODU	CT NUN	MBER:	S020401	(BA-04)	LOT N	UMBER	R: 4207	110		ASSAY	(HCI, w	v/w):349	%	[	
2A  Li 4 Be average of three aliquots subsampled from three samples representative of the lot. The samples are slowly evaporated to dryness, the resulting residue is reconstituted in a small volume of 2% SEASTAR™ BAS€LIN€®  Nitric Acid. Operations are conducted under Class 100 particle or better clean-room conditions. For volatile													7A			
2 Mg < 5		s the standard deviation of the blank are shown with "<", no blank value is subtracted.									13 AI < 10					
2 <b>0 C</b> a < 10	21 Sc < 1	<b>22</b> Ti < 10	23 V < 1	<b>24</b> Cr < 10	<b>25</b> Mn < 2	<b>26 Fe</b> < 10	27 Co	28 Ni < 10	<b>29</b> Cu < 3	30 Zn < 5	31 Ga < 1		33 As < 20	<b>34 Se</b> < 50		
38 Sr < 1	<b>39 Y</b> < 0.1	<b>40</b> Zr < 1	41 Nb < 1	<b>42</b> Mo < 5		<b>44</b> Ru < 10	45 Rh < 1	<b>46</b> Pd < 10	47 Ag < 5	<b>48 Cd</b> < 0.1	<b>49</b> In < 0.1	<b>50</b> Sn < 10	<b>51 Sb</b> < 20	<b>52</b> Te < 1		
56 Ba	57 La < 0.05			74 W								82 Pb < 1				
	2A 4 Be < 5 12 Mg < 5 20 Ca < 10 38 Sr < 1	2A Most eler average evaporate Nitric Aci elements times the 3B  20 Ca 21 Sc < 10 < 1  38 Sr 39 Y < 0.1	Most elements are of average of three ali evaporated to drynes. Nitric Acid. Operation elements (indicated times the standard drynes) as AB  20 Ca 21 Sc 22 Ti < 10 < 10 < 10  38 Sr 39 Y 40 Zr < 1 < 0.1 < 1	Most elements are determined average of three aliquots subsevaporated to dryness, the resundir Acid. Operations are corelements (indicated by *), the atimes the standard deviation of to 3B 4B 5B  20 Ca 21 Sc 22 Ti 23 V < 10 < 10 < 1 < 10 < 1  38 Sr 39 Y 40 Zr 41 Nb < 1 < 1 < 1  56 Ba 57 La 72 Hf 73 Ta	Most elements are determined by magnetic average of three aliquots subsampled from evaporated to dryness, the resulting residue Nitric Acid. Operations are conducted undelements (indicated by *), the acid sample times the standard deviation of the blank are 3B 4B 5B 6B  20 Ca 21 Sc 22 Ti 23 V 24 Cr < 10 < 10 < 1 < 10  38 Sr 39 Y 40 Zr 41 Nb 42 Mo < 1 < 1 < 5  56 Ba 57 La 72 Hf 73 Ta 74 W	Most elements are determined by magnetic sector ICP average of three aliquots subsampled from three san evaporated to dryness, the resulting residue is reconstit Nitric Acid. Operations are conducted under Class 10 elements (indicated by *), the acid samples are diluted times the standard deviation of the blank are shown with 3B 4B 5B 6B 7B  20 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn < 10 < 10 < 1 < 10 < 2  38 Sr 39 Y 40 Zr 41 Nb 42 Mo < 2  38 Sr 39 Y 40 Zr 41 Nb 42 Mo < 5  66 Ba 57 La 72 Hf 73 Ta 74 W 75 Re	Most elements are determined by magnetic sector ICP-MS using saverage of three aliquots subsampled from three samples represe evaporated to dryness, the resulting residue is reconstituted in a sm Nitric Acid. 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Operations are conducted under Class 100 particle or better cleelements (indicated by *), the acid samples are diluted then directly injected times the standard deviation of the blank are shown with "<", no blank value is successed as a second state of the property of	Most elements are determined by magnetic sector ICP-MS using sample preconcentration average of three aliquots subsampled from three samples representative of the lot. The evaporated to dryness, the resulting residue is reconstituted in a small volume of 2% SEAST Nitric Acid. Operations are conducted under Class 100 particle or better clean-room concentration of the blank are shown with "<", no blank value is subtracted.  3B 4B 5B 6B 7B 8  20 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn 26 Fe 27 Co 28 Ni 41 Nb 42 Mo 41 Concentration of the blank are shown with "<", no blank value is subtracted.  38 Sr 39 Y 40 Zr 41 Nb 42 Mo 44 Ru 45 Rh 46 Pd 45 Ni 46 Pd 46 No 47 No	wost elements are determined by magnetic sector ICP-MS using sample preconcentration. The rest average of three aliquots subsampled from three samples representative of the lot. The samples average of three aliquots subsampled from three samples representative of the lot. The samples average of three aliquots subsampled from three samples representative of the lot. The samples average of three aliquots subsampled from three samples representative of the lot. The samples average of three aliquots subsampled from three samples representative of the lot. 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#### ALL VALUES ARE REPORTED IN PARTS PER TRILLION (PPT)

KEY	(1)	Atomi
(1) (2)	(2)	Eleme
(3)	(3)	Conce
(4)		in
	(1)	1 Star

(1) Atomic Number

BASELINE

(2) Elemental Symbol(3) Concentration (mean in ppt)

(4) 1 Standard Deviation (N=3)

58 Ce	59 Pr	60 Nd	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
90 Th		92 U										
< 0.05		< 0.01										



HCI (32 - 35%): Properties

Molar Mass: 36.46g/mol
Density: 1.17 g/ml
Molarity: 11 moles/litre
Normality: 11 moles/litre

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Dr. B. McKelvey QA/QC Manager Release Date: February 20, 2008 Expiry Date: February 20, 2011

## **Product Integrity:**

Based on extensive testing results, SEASTAR CHEMICALS INC have found our products, unopened and sealed, maintain the certified integrity, or product quality, for a minimum of three years under the following conditions:

- Stored at room temperature, maximum range 15°C (59°F) to 25°C (77°F).
- Minimum exposure to light.
- For limited time, storage/transport temperature range 5°C (41°F) to 35°C (95°F)

Upon opening the product, the product's integrity will depend on proper handling and exposure to contaminants. The product has been bottled under CLASS 100 clean room conditions, to maintain the certified quality it should be used under these conditions. Furthermore to reduce trace metal contamination, the inner pack of plastic bags and bottle should be opened under CLASS 100 particle conditions to maintain the integrity of the product. The use of plastic gloves, hair net and a clean room suit is also advised.

### Safety:

PRIOR to opening or storing this product be sure to consult the Material Safety Data Sheet (MSDS) Section 7 Handling and Storage to ensure safe storage and handling with regards to this hazardous material. This information must be understood prior to its use or storage.

SAFETY HANDLING NOTES: Consult your MSDS, PRIOR to handling these materials. Use proper safety apparel according to the recommendations of the MSDS. Exposure controls and personal protection should include: a properly functioning fume hood, protection for eyes (safety glasses), hands (chemically compatible gloves), feet (chemically compatible boots) and exposed skin (splash protection and a chemically compatible apron). All of these items must conform to local/regional/national regulatory requirements.

Dr. B. McKelvey QA/QC Manager

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